WHAT IS CLAIMED IS:

1. A pixel clock generation apparatus, comprising:

a detector detecting a time interval between two horizontal synchronization signals;

a comparing part comparing the time interval detected by said detector and a target value, and outputting a difference therebetween;

a phase shift data generation part having a lookup table storing a pattern of phase shift data for controlling a phase shift amount of a pixel clock, and reading and outputting the phase shift data from the lookup table based on the difference that is output from said comparing part;

a high frequency clock generation part generating a high frequency clock; and

a pixel clock generation part generating the pixel clock whose phase is controlled in accordance with the phase shift data that are output from said phase shift data generating part based on the high frequency clock that is generated by said high frequency clock

generating part.

2. The pixel clock generation apparatus as claimed in claim 1, wherein phase control of the pixel clock is performed on each data area, where one data area is formed by a plurality of consecutive pixel clocks.

3. The pixel clock generation apparatus as claimed in claim 1, wherein the phase shift data generating part stores a plurality of the lookup tables, and the lookup tables from which the phase shift data are read are switched within one scan line period.

4. The pixel clock generation apparatus as claimed in claim 1, wherein the pixel clocks subjected

to phase shift are spaced substantially equally.

5. The pixel clock generation apparatus as claimed in claim 4, wherein the phase shift data generation part includes a unit that sets an interval between the pixel clocks subjected to the phase shift to a value obtained by multiplying a reference value by a multiplying factor for correction corresponding to a resolution.

6. The pixel clock generation apparatus as claimed in claim 1, wherein the pixel clocks subjected to phase shift are spaced unequally.

7. The pixel clock generation apparatus as claimed in claim 1, wherein, in an image height region

having a great variation of a main scan dot position shift, an interval between the pixel clocks subjected to phase shift is decreased compared to in an image height region having a small variation of the main scan dot position shift.

8. The pixel clock generation apparatus as claimed in claim 1, wherein the phase shift data generation part switches, for each scan line, a plurality of the lookup tables from which the phase shift data are read.

9. The pixel clock generation apparatus as claimed in claim 1, wherein, when there are consecutive scan lines to which the phase shift data of an identical pattern are output, the phase shift data generation part varies the pattern of the phase shift data.

10. The pixel clock generation apparatus as claimed in claim 1, wherein, when there are consecutive scan lines to which the phase shift data of an identical pattern are output, the phase shift data generation part varies the pattern of the phase shift data by switching a plurality of the lookup tables.

11. The pixel clock generation apparatus as claimed in claim 10, wherein a pattern of the phase shift data after the switching of the lookup tables is such that the pixel clock in a substantially middle position of the pixel clocks subjected to phase shift by a pattern of the phase shift data before the switching of the lookup tables is subjected to phase shift.

12. The pixel clock generation apparatus as claimed in claim 10, wherein a pattern of the phase

shift data after the switching of the lookup tables is such that the pixel clock at a position that is shifted for a constant number of clocks from the pixel clock subjected to phase shift in a pattern of the phase shift data before the switching of the lookup tables is subjected to phase shift.

13. The pixel clock generation apparatus as claimed in claim 10, wherein, when there are N ($N \geqq 2$) consecutive scan lines to which the phase shift data of an identical pattern are output, the phase shift data generation part varies the pattern of the phase shift data by switching the lookup tables in the next scan line.

14. The pixel clock generation apparatus as claimed in claim 10, wherein the switching of the lookup tables in a case where there are the consecutive scan lines to which the phase shift data of an identical

pattern is output is performed only in an effective scan region of the scan line where image forming is performed.

15. A pixel clock generation apparatus, comprising:

a detector detecting a time interval between each two adjacent horizontal synchronization signals among three or more of the horizontal synchronization signals;

a comparing part comparing each time interval detected by said detector with a target value and outputting each difference therebetween;

a phase shift data generation part having at least one lookup table storing a pattern of phase shift data for controlling a phase shift amount of a pixel clock, and reading and outputting the phase shift data from the lookup table based on each difference that is output from said comparing part;

a high frequency clock generation part generating a high frequency clock; and

a pixel clock generation part generating a pixel clock whose phase is controlled in accordance with

the phase shift data that are output from said phase shift data generating part based on the high frequency clock that is generated by said high frequency clock generating part.

16. The pixel clock generation apparatus as claimed in claim 15, wherein phase control of the pixel clock is performed on each data area, where one data area is formed by a plurality of consecutive pixel clocks.

17. The pixel clock generation apparatus as claimed in claim 15, wherein the phase shift data generating part stores a plurality of the lookup tables, and the lookup tables from which the phase shift data are read are switched within one scan line period.

18. The pixel clock generation apparatus as claimed in claim 15, wherein the pixel clocks subjected to phase shift are spaced substantially equally.

19. The pixel clock generation apparatus as claimed in claim 18, wherein the phase shift data generation part includes a unit that sets an interval between the pixel clocks subjected to the phase shift to a value obtained by multiplying a reference value by a multiplying factor for correction corresponding to a resolution.

20. The pixel clock generation apparatus as claimed in claim 15, wherein the pixel clocks subjected to phase shift are spaced unequally.

21. The pixel clock generation apparatus as claimed in claim 15, wherein, in an image height region having a great variation of a main scan dot position shift, an interval between the pixel clocks subjected to phase shift is decreased compared to in an image height region having a small variation of the main scan dot position shift.

22. The pixel clock generation apparatus as claimed in claim 15, wherein the phase shift data generation part switches, for each scan line, a plurality of the lookup tables from which the phase shift data are read.

23. The pixel clock generation apparatus as claimed in claim 15, wherein, when there are consecutive scan lines to which the phase shift data of an identical pattern are output, the phase shift data generation part

varies the pattern of the phase shift data.

24. The pixel clock generation apparatus as claimed in claim 15, wherein, when there are consecutive scan lines to which the phase shift data of an identical pattern are output, the phase shift data generation part varies the pattern of the phase shift data by switching a plurality of the lookup tables.

25. The pixel clock generation apparatus as claimed in claim 24, wherein a pattern of the phase shift data after the switching of the lookup tables is such that the pixel clock in a substantially middle position of the pixel clocks subjected to phase shift by a pattern of the phase shift data before the switching of the lookup tables is subjected to phase shift.

26. The pixel clock generation apparatus as claimed in claim 24, wherein a pattern of the phase shift data after the switching of the lookup tables is such that a pixel clock at a position that is shifted for a constant number of clocks from a pixel clock subjected to phase shift in a pattern of the phase shift data before the switching of the lookup tables is subjected to the phase shift.

27. The pixel clock generation apparatus as claimed in claim 24, wherein, when there are N ($N \geqq 2$) consecutive scan lines to which the phase shift data of an identical pattern are output, the phase shift data generation part varies the pattern of the phase shift data by switching the lookup tables in the next scan line.

28. The pixel clock generation apparatus as

claimed in claim 24, wherein the switching of the lookup tables in a case where there are the consecutive scan lines to which the phase shift data of an identical pattern is output is performed only in an effective scan region of the scan line where image forming is performed.

29. A pixel clock generation method, comprising the steps of:

detecting a time interval between two horizontal synchronization signals;

reading phase shift data from a lookup table based on a difference between the detected time interval and a target value; and

controlling phase of a pixel clock in accordance with the phase shift data.

30. A pixel clock generation method, comprising the steps of:

detecting a time interval between each two

adjacent horizontal synchronization signals among three or more of the horizontal synchronization signals;

reading phase shift data from a lookup table based on each difference between the detected time interval and a target value; and

controlling phase of a pixel clock in accordance with the phase shift data.

31. An image forming apparatus, comprising:

a medium to be scanned;

a light beam source outputting a light beam;

a deflecting part deflecting the light beam output from said light beam source so that the deflected light beam scans said medium to be scanned and forms an image on said medium to be scanned;

a pixel clock generation apparatus generating a pixel clock; and

a horizontal synchronization detector detecting scan timings at which the light beam scans two or more specific horizontal scan positions, so as to generate two or more horizontal synchronization signals supplied to said pixel clock generation apparatus,

said pixel clock generation apparatus including:

a detector detecting a time interval between two of the horizontal synchronization signals;

a comparing part comparing the time interval detected by said detector and a target value, and outputting a difference therebetween;

a phase shift data generation part having a lookup table storing a pattern of phase shift data for controlling a phase shift amount of the pixel clock, and reading and outputting the phase shift data from the lookup table based on the difference that is output from said comparing part;

a high frequency clock generation part generating a high frequency clock; and

a pixel clock generation part generating the pixel clock whose phase is controlled in accordance with the phase shift data that are output from said phase shift data generating part based on the high frequency clock that is generated by said high frequency clock generating part,

wherein said light beam source is driven in synchronization with the pixel clock generated by said pixel clock generation apparatus.

32. The image forming apparatus as claimed in claim 31, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, and two or more photodetectors receiving the light beams separated by said unit and arranged at respective positions corresponding to the two or more specific horizontal scan positions.

33. The image forming apparatus as claimed in claim 31, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, two or more reflecting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beams separated by said unit being incident on said reflecting members, and a photodetector receiving the light beams reflected by the reflecting members.

34. The image forming apparatus as claimed in claim 31, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, a reflecting member and one or more reflecting/transmitting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beams separated by said unit being incident on said reflecting member and said one or more reflecting/transmitting members, and a photodetector receiving the light beams reflected by the reflecting member and said one or more reflecting/transmitting members.

35. The image forming apparatus as claimed in claim 31, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting

part, two or more reflecting/transmitting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beams separated by said unit being incident on said reflecting/transmitting members, and a photodetector receiving the light beams reflected by said reflecting/transmitting members.

36. The image forming apparatus as claimed in claim 31, further comprising:

a light beam source for reference,

wherein a light beam for reference output from said light beam source for reference is incident on the deflecting part, and the light beam for reference deflected by the deflecting part scans outside of the medium to be scanned, and

wherein the horizontal synchronization detector consists of two or more photodetectors receiving the light beam for reference deflected by the deflecting part, and are arranged at respective positions corresponding to the specific horizontal scan positions.

37. The image forming apparatus as claimed in claim 31, further comprising:

a light beam source for reference,

wherein a light beam for reference output from said light beam source for reference is incident on the deflecting part, and the light beam for reference deflected by the deflecting part scans outside of the medium to be scanned, and

wherein the horizontal synchronization detector consists of two or more reflecting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beam for reference deflected by the deflecting part being incident on said reflecting members, and a photodetector receiving the light beam for reference reflected by said more reflecting members.

38. An image forming apparatus, comprising:

a medium to be scanned;

a light beam source outputting a light beam;

a deflecting part deflecting the light beam output from said light beam source so that the deflected light beam scans said medium to be scanned and forms an image on said medium to be scanned;

a pixel clock generation apparatus generating a pixel clock; and

a horizontal synchronization detector detecting scan timings at which the light beam scans two or more specific horizontal scan positions, so as to generate two or more horizontal synchronization signals supplied to said pixel clock generation apparatus,

said pixel clock generation apparatus including:

a detector detecting a time interval between each two adjacent horizontal synchronization signals among three or more of the horizontal synchronization signals;

a comparing part comparing each time interval detected by said detector with a target value and outputting each difference therebetween;

a phase shift data generation part having one or more lookup tables each storing a pattern of phase shift data for controlling a phase shift amount of

a pixel clock, and reading and outputting the phase shift data from one of the lookups table based on each difference that is output from said comparing part;

a high frequency clock generation part generating a high frequency clock; and

a pixel clock generation part generating a pixel clock whose phase is controlled in accordance with the phase shift data that are output from said phase shift data generating part based on the high frequency clock that is generated by said high frequency clock generating part,

wherein said light beam source is driven in synchronization with the pixel clock generated by said pixel clock generation apparatus.

39. The image forming apparatus as claimed in claim 38, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, and two or more photodetectors receiving the light beams separated by said unit and arranged at respective positions corresponding to the specific horizontal scan

positions.

40. The image forming apparatus as claimed in claim 38, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, two or more reflecting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beams separated by said unit being incident on said reflecting members, and a photodetector receiving the light beams reflected by the reflecting members.

41. The image forming apparatus as claimed in claim 38, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, a reflecting member and one or more reflecting/transmitting members arranged at respective

positions corresponding to the specific horizontal scan positions, the light beams separated by said unit being incident on said reflecting member and said one or more reflecting/transmitting members, and a photodetector receiving the light beams reflected by the reflecting member and said one or more reflecting/transmitting members.

42. The image forming apparatus as claimed in claim 38, wherein the horizontal synchronization detector consists of a unit separating a part of a plurality of the light beams deflected by the deflecting part, two or more reflecting/transmitting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beams separated by said unit being incident on said reflecting/transmitting members, and a photodetector receiving the light beams reflected by said reflecting/transmitting members.

43. The image forming apparatus as claimed in claim 38, further comprising:

a light beam source for reference,

wherein a light beam for reference output from said light beam source for reference is incident on the deflecting part, and the light beam for reference deflected by the deflecting part scans outside of the medium to be scanned, and

wherein the horizontal synchronization detector consists of two or more photodetectors receiving the light beam for reference deflected by the deflecting part, and are arranged at respective positions corresponding to the specific horizontal scan positions.

44. The image forming apparatus as claimed in claim 38, further comprising:

a light beam source for reference,

wherein a light beam for reference output from said light beam source for reference is incident on the deflecting part, and the light beam for reference

deflected by the deflecting part scans outside of the medium to be scanned, and

wherein the horizontal synchronization detector consists of two or more reflecting members arranged at respective positions corresponding to the specific horizontal scan positions, the light beam for reference deflected by the deflecting part being incident on said reflecting members, and a photodetector receiving the light beam for reference reflected by said reflecting members.

45. A tandem-type image forming apparatus, comprising:

a plurality of color stations corresponding to respective colors, each including a light beam source for image writing, a pixel clock generation apparatus, and a horizontal synchronization detector for generating two or more horizontal synchronization signals supplied to said pixel clock generation apparatus,

said pixel clock generation apparatus including:

a detector detecting a time interval

between two of the horizontal synchronization signals;

a comparing part comparing the time interval detected by said detector and a target value, and outputting a difference therebetween;

a phase shift data generation part having a lookup table storing a pattern of phase shift data for controlling a phase shift amount of a pixel clock, and reading and outputting the phase shift data from the lookup table based on the difference that is output from said comparing part;

a high frequency clock generation part generating a high frequency clock; and

a pixel clock generation part generating the pixel clock whose phase is controlled in accordance with the phase shift data that are output from said phase shift data generating part based on the high frequency clock that is generated by said high frequency clock generating part,

wherein, in each of the color stations, said light beam source for image writing is driven in synchronization with the pixel clock generated by the pixel clock generation apparatus corresponding to the color station.

46. A tandem-type image forming apparatus, comprising:

a plurality of color stations corresponding to respective colors, each including a light beam source for image writing, a pixel clock generation apparatus, and a horizontal synchronization detector for generating two or more horizontal synchronization signals supplied to said pixel clock generation apparatus,

said pixel clock generation apparatus including:

a detector detecting a time interval between each two adjacent horizontal synchronization signals among three or more of the horizontal synchronization signals;

a comparing part comparing each time interval detected by said detector with a target value and outputting each difference therebetween;

a phase shift data generation part having one or more lookup tables each storing a pattern of phase shift data for controlling a phase shift amount of a pixel clock, and reading and outputting the phase shift data from one of the lookup tables based on each difference that is output from said comparing part;

a high frequency clock generation part generating a high frequency clock; and

a pixel clock generation part generating a pixel clock whose phase is controlled in accordance with the phase shift data that are output from said phase shift data generating part based on the high frequency clock that is generated by said high frequency clock generating part,

wherein, in each of the color stations, said light beam source for image writing is driven in synchronization with the pixel clock generated by the pixel clock generation apparatus corresponding to the color station.